

## ABSTRACT

Peptide compounds and methods for upregulating expression of a gene encoding an antioxidative enzyme, such as superoxide dismutase or catalase, to counteract harmful oxidative effects of reactive oxygen species and other free radicals are described. The peptide compounds may be used to treat or prevent diseases and conditions characterized by undesirable elevation of reactive oxygen species and other free radicals, to upregulate AP-1 gene expression, and to treat pain. The peptide compounds may be used as components of pharmaceuticals and dietary supplements.